

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1 - 3. Canceled.

4. (Previously Presented) An electrosurgery system for treating tissue immersed in an electrically conductive fluid, comprising:

a generator for delivering a radio frequency tissue treatment output in the frequency range of from 100kHz to 50 MHz, and

an elongate instrument shaft configured to be mounted at a proximal end to a handpiece and carrying at its distal end a bipolar electrode assembly connected to the generator, wherein the electrode assembly includes:

an active electrode with an active zone at a distal end of the active electrode; and

a return electrode with a return zone near the active zone;

wherein at least one of the active and return zones has an electrically insulating dielectric covering such that in use a radio frequency electrical circuit between the active and return electrodes through the conductive fluid is completed primarily by dielectric coupling through the dielectric covering; and

wherein the frequency of operation of the generator and the construction of the electrode assembly are such that when a radio frequency current of 2 amps is delivered to the electrode assembly when immersed in normal saline, the current density at the outer surface of the dielectric covering does not exceed 50 mA/mm².

5. Canceled.

6. (Previously Presented) A system according to claim 4, wherein both the active zone and the return zone are encased in respective insulative dielectric coverings so that said

active zone is insulated from direct electrical contact with said tissue and said electrically conductive fluid and, in use, a circuit is completed between said active and return electrodes primarily by dielectric coupling through both coverings.

7. (Original) A system according to claim 6, wherein the frequency of operation of the generator and the construction of the electrode assembly are such that there is a substantially uniformly distribution of electric field over said active and return zones and a corresponding substantially uniform current density of said electric field.

8. Canceled.

9. (Previously Presented) An electrosurgery system for treating tissue immersed in an electrically conductive fluid, comprising:

a generator for delivering a radio frequency tissue treatment output in the frequency range of from 100kHz to 50 MHz, and

an elongate instrument shaft configured to be mounted at a proximal end to a handpiece and carrying at its distal end a bipolar electrode assembly connected to the generator, wherein the electrode assembly includes:

an active electrode with an active zone at a distal end of the active electrode; and

a return electrode with a return zone near the active zone;

wherein at least one of the active and return zones has an electrically insulating dielectric covering such that in use a radio frequency electrical circuit between the active and return electrodes through the conductive fluid is completed primarily by dielectric coupling through the dielectric covering; and

wherein each dielectric covering has a thickness greater than 50 μm .

10. (Previously Presented) A system according to claim 4, wherein each said dielectric covering is of sufficient thickness to result in a limited current density over said active

and return zones so as to prevent significant power dissipation in any carbon tracking between said active and return zones during use of said electrode assembly.

11. (Original) A system according to claim 6, wherein said dielectric coverings over said return zone and said active zone both have a thickness greater than 50 μm .

12. (Original) A system as recited in claim 7, wherein said dielectric coverings over said return zone and said active zone both have a thickness less than 50 μm .

13. (Previously Presented) An electrosurgery system for treating tissue immersed in an electrically conductive fluid, comprising:

a generator for delivering a radio frequency tissue treatment output in the frequency range of from 100kHz to 50 MHz, and

an elongate instrument shaft configured to be mounted at a proximal end to a handpiece and carrying at its distal end a bipolar electrode assembly connected to the generator, wherein the electrode assembly includes:

an active electrode with an active zone at a distal end of the active electrode; and

a return electrode with a return zone near the active zone;

wherein at least one of the active and return zones has an electrically insulating dielectric covering such that in use a radio frequency electrical circuit between the active and return electrodes through the conductive fluid is completed primarily by dielectric coupling through the dielectric covering; and

wherein the insulating covering which covers the return zone has a first pre-determined thickness and wherein a remainder of the return electrode is coated with a second dielectric covering having a second pre-determined thickness greater than the first pre-determined thickness and capable of substantially preventing capacitive coupling of the said remainder of the return electrode to other instruments or to tissue within a body cavity.

14. (Original) A system according to claim 13, wherein the return zone is isolated from the remainder of the return electrode by an isolating transformer positioned between the return zone and the remainder of the return electrode.

15. (Original) A system according to claim 13, wherein the return zone is isolated from the said remainder of the return electrode by an isolating transformer positioned between the return zone and the said remainder of the return electrode.

16. (Previously Presented) A system according to claim 9, wherein both the active zone and the return zone are encased in respective insulative dielectric coverings, wherein the dielectric covering encasing the return zone has a first pre-determined thickness and wherein a remainder of the return electrode is coated with a third dielectric insulating material layer having a second pre-determined thickness greater than the first pre-determined thickness and capable of substantially preventing capacitive coupling of the said remainder of the return electrode to other instruments or to tissue within a body cavity.

17. (Original) A system according to claim 16, wherein the return zone is isolated from the said remainder of the return electrode by a common mode choke positioned between the return zone and the said remainder of the return electrode.

18. (Original) A system according to claim 16, wherein the return zone is isolated from the said remainder of the return electrode by an isolating transformer positioned between the return zone and the remainder of the return electrode.

19. (Previously Presented) An electrosurgery system for treating tissue immersed in an electrically conductive fluid, comprising:

a generator for delivering a radio frequency tissue treatment output in the frequency range of from 100kHz to 50 MHz, and

an elongate instrument shaft configured to be mounted at a proximal end to a handpiece and carrying at its distal end a bipolar electrode assembly connected to the generator, wherein the electrode assembly includes:

an active electrode with an active zone at a distal end of the active electrode; and
a return electrode with a return zone near the active zone;

wherein at least one of the active and return zones has an electrically insulating dielectric covering such that in use a radio frequency electrical circuit between the active and return electrodes through the conductive fluid is completed primarily by dielectric coupling through the dielectric covering; and

wherein the insulative covering encases the active zone.

20. (Original) A system according to claim 19, wherein the frequency of operation of the generator and the construction of the electrode assembly are such that when a radio frequency current of 2 amps is delivered to the electrode assembly when immersed in normal saline, the current density at the outer surface of the dielectric covering does not exceed 50 mA/mm².

21. (Previously Presented) A system according to claim 19, wherein the active electrode is configured as at least one of a long needle and a wire and wherein the insulating covering on the active zone is of sufficient thickness that current density is limited over the active zone and the active electrode can operate power efficiently when partly enveloped within a vapour pocket during vaporisation.

Claims 22 - 24. Canceled.

25. (Previously Presented) An electrosurgical instrument for treating tissue immersed in an electrically conductive fluid with radio frequency energy in the frequency range of from 100 kHz to 50 MHz, wherein the instrument comprises an elongate shaft configured to be

mounted at a proximal end to a handpiece and carrying at its distal end a bipolar electrode assembly which includes:

an active electrode with an active zone at a distal end of the active electrode; and
a return electrode with a return zone near the active zone;

wherein at least one of the active and return zones has an electrically insulating dielectric covering such that in use a radio frequency electrical circuit between the active and return electrodes through the conductive fluid is completed at least primarily by dielectric coupling through the dielectric covering; and

wherein the electrode assembly is constructed such that, when an electrosurgical radio frequency current at at least one frequency in the said frequency range is delivered to the assembly when immersed in normal saline, the current density at the outer surface of the dielectric covering does not exceed 50mA/mm^2 .

26. (Previously Presented) An instrument according to claim 25, wherein the thickness of the or each dielectric covering is greater than $50\text{ }\mu\text{m}$.

27. (Previously Presented) An instrument according to claim 25, wherein the thickness of the or each dielectric covering is less than $50\text{ }\mu\text{m}$.

28. (Previously Presented) An electrosurgical instrument for treating tissue immersed in an electrically conductive fluid with radio frequency energy in the frequency range of from 27 MHz to 50 MHz, wherein the instrument comprises an elongate shaft configured to be mounted at a proximal end to a handpiece and carrying at its distal end a bipolar electrode assembly which includes:

an active electrode with an active zone at a distal end of the active electrode; and
a return electrode with a return zone near the active zone;

wherein at least one of the active and return zones has an electrically insulating dielectric covering such that in use a radio frequency electrical circuit between the active and

return electrodes through the conductive fluid is completed at least primarily by dielectric coupling through the dielectric covering; and

wherein the insulating covering encases the return zone, and the active zone is exposed;
and

wherein said dielectric covering which covers the return zone has a first pre-determined thickness and wherein a remainder of the return electrode is coated with a second dielectric covering having a second pre-determined thickness greater than the first pre-determined thickness and capable of substantially preventing capacitive coupling of said remainder of the return electrode to other instruments or to tissue within a body cavity.

29. (Original) An instrument according to claim 28, wherein the return zone is isolated from said remainder of the return electrode by a common mode choke positioned between the return zone and said remainder of the return electrode.

30. (Original) An instrument according to claim 28, wherein the return zone is isolated from said remainder of the return electrode by an isolating transformer positioned between the return zone and said remainder of the return electrode.

31. (Previously Presented) An instrument according to claim 25, wherein both the active zone and the return zone are encased in respective insulative dielectric coverings, wherein the dielectric covering encasing the return zone has a first pre-determined thickness and wherein a remainder of the return electrode is coated with a third dielectric insulating material layer having a second pre-determined thickness greater than the first pre-determined thickness and capable of substantially preventing capacitive coupling of said remainder of the return electrode to other instruments or to tissue within a body cavity.

32. (Previously Presented) An electrosurgical instrument for treating tissue immersed in an electrically conductive fluid with radio frequency energy in the frequency range of from

100 kHz to 50 MHz, wherein the instrument comprises an elongate shaft configured to be mounted at a proximal end to a handpiece and carrying at its distal end a bipolar electrode assembly which includes:

an active electrode with an active zone at a distal end of the active electrode; and
a return electrode with a return zone near the active zone;

wherein at least one of the active and return zones has an electrically insulating dielectric covering such that in use a radio frequency electrical circuit between the active and return electrodes through the conductive fluid is completed at least primarily by dielectric coupling through the dielectric covering; and

wherein the dielectric covering encases the active zone.

33. (Original) An instrument according to claim 32, wherein the active electrode is configured as a long needle or wire and wherein the insulating covering on the active zone is of sufficient thickness that current density is limited over the active zone and the active electrode can operate power efficiently when partly enveloped within a vapour pocket during vaporisation.

34. (Original) An instrument according to claim 32, wherein the active electrode comprises a ceramic body defining an internal cavity which cavity is lined with metal, the ceramic body having an outer tissue or fluid contact surface.

35. (Original) An instrument according to claim 32, wherein the return zone is covered with an insulative dielectric outer layer having an outer fluid contact surface.

Claims 36 - 40. Canceled.